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# California's Small Aerospace Suppliers Surviving Defense Downsizing

Six years after Congress began reducing defense outlays, small California machine shops and aircraft parts suppliers remain highly dependent on the aerospace industry. Many firms in these two segments of the state's small defense aerospace supplier base have not branched into production of cutting-edge products for commercial customers. And other firms in these segments also may face shortages of software and product design engineers and of skilled machinists.

So concludes a recent RAND analysis of the impact of defense downsizing on California companies. The study investigated how 25 small, California-based suppliers in the defense aerospace industry—14 machine shops and aircraft parts makers; 11 electronics firms and materials firms—weathered the Pentagon's budget downturns of the early 1990s.

But while noting these warning signs for several of the industry's subgroups, the RAND study found that much of California's small aerospace supplier base has survived the slide in Pentagon business, turning to commercial customers and other lines of production, increasing their productivity and, if necessary, reducing their work forces to compensate for lost defense aerospace revenues. Indeed, the state's small aerospace supplier infrastructure remains fundamentally intact, despite drops in defense revenues and overall employment levels. Few, if any, small aerospace suppliers intend to relocate from California, with its rich sources of customers, suppliers, and employees.

## CALIFORNIA'S AEROSPACE INDUSTRY SPIRALED DOWN IN 1989-1994

Aerospace companies have reeled in the wake of a 20-percent dive in the amount that the Pentagon budgeted for research and development and for procurement between 1989 and 1994. Nationwide, the U.S. aerospace-industry job base shrank 25 percent during that period.

The impact was even more dramatic in California. Home to one in four of the country's aerospace employees in 1989, California saw its aerospace industry employment rolls fall by 40 percent. Much of the decline was in Los Angeles County, where 10 percent of the nation's aerospace employees worked in 1989. In 1994, some 121,000 people worked in the aerospace industry in the county, half the number who had been employed in that sector five years earlier.

## SMALL AEROSPACE SUPPLIERS A SPECIAL CASE?

With 500 or fewer employees in each firm, small suppliers may be particularly sensitive to Pentagon budget cuts. Unlike large defense contractors with broad mixes of products and manufacturing procedures, small suppliers typically concentrate on making one or a handful of products. They account for the bulk of firms in the aerospace business even though they receive only 10 percent of defense dollars going to contractors. Nevertheless, they make up a crucial segment of the aerospace industry, one that could be difficult to replace should defense cuts force many of them out of military contracting.

This study investigated how small suppliers were affected by defense procurement cuts, how they responded to the cuts, and how effective government programs were in blunting the cuts' impacts. The study traced the experiences that small suppliers had with producing for both defense and commercial customers. Additionally, the study investigated how defense downsizing may influence the ability of small aerospace suppliers to make crucial defense products in the future.

The case study firms were chosen from a list of firms that supplied products to three of the largest military aircraft programs from 1988 through 1990. Their median employment level was 68 workers, a typical number for small suppliers. Case studies allowed RAND researchers to conduct in-depth interviews with executives to obtain

information on the decisions and responses they made to defense downsizing.

## SMALL SUPPLIER SURVIVAL STRATEGIES

All case study firms felt the impact of defense spending declines, although not necessarily in the same proportions. To date, most suppliers have survived the reductions by shaving their work forces, increasing their productivity, or expanding into commercial markets, or by some combination of those tactics.

The firms' annual defense revenues fell by an average of 43 percent between 1990 and 1994. However, total revenues didn't fall so dramatically, declining on average only 15 percent. Employment declined proportionally.

Firms' success in compensating for lost defense revenues varied, depending on their products. The study group's electronics firms and materials firms, by and large, were more successful in expanding commercial revenues. A majority increased total revenues significantly, mostly from sales to nonaerospace commercial customers. These firms already had a foothold in the commercial nonaerospace market prior to 1990 and were facing a growing market for their products.

In contrast, the 14 machine shops and aircraft parts firms in the study were less successful in finding additional commercial revenues, replacing only one of five lost defense revenue dollars. New revenues came mostly from additional sales to commercial aerospace customers. These firms' manufacturing processes were designed for narrow tolerances and low volumes and have not been readily transferrable to high-volume/cost-competitive, nonaerospace commercial applications. In addition, these firms have lacked the knowledge and marketing experience to enter nonaerospace markets. As a result, few have been able to make the transition; most abandoned the effort, perceiving it as simply not feasible.

Firms producing for the commercial market used the same production lines and processes that they used in defense manufacturing. They did not physically segregate any parts of their operations or set up a separate data

management system to do business with prime contractors.

Although most firms downsized or otherwise changed to accommodate the new business environment, most did so in ways that did not weaken their capabilities. Most firms with an engineering staff generally protected that staff. They also cut costs and increased productivity. Most case study firms indicated they could increase production to previous peak levels within four to six months, should the need arise. And most indicated they had no plans to move away from California, which offers access to customers and suppliers and to a skilled labor force.

Only one firm took advantage of available federal defense conversion programs, including the Defense Transition Reinvestment Program. Generally, the focus and structure of federal programs are not designed for the needs and capabilities of small supplying firms. The general perception among the case study firms was that any benefits were outweighed by the costs of application and of meeting the stringent program requirements. In contrast, 25 percent of the firms received funds from California to train or retrain their workers.

## WARNING SIGNS

Three study conclusions require further research on a larger representative sample of small suppliers:

- Machine shops and aircraft parts suppliers remain highly dependent on the aerospace industry. Further reductions in demand for military or civilian aerospace products may push many of them out of business.
- Small defense aerospace suppliers are not making cutting-edge products for commercial customers.
- Small defense aerospace suppliers in Southern California may suffer from increasing shortages of two types of skilled employees: (1) engineers experienced in programming software for electronic warfare systems and for product design and testing and (2) experienced machinists with problem-solving skills.

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*RAND research briefs summarize research that has been more fully documented elsewhere. This research brief describes work done for the National Defense Research Institute; it is documented in California's Shrinking Defense Contractors: Effects on Small Suppliers, by Georgez Vernez, Michael Dardia, Kevin F. McCarthy, Jesse Malkin, and Robert Nordyke, MR-687-OSD, 82 pp., \$15.00, ISBN: 0-8330-2355-1, available from RAND Distribution Services (Telephone: 310-451-7002; FAX: 310-451-6915; or Internet: [order@rand.org](mailto:order@rand.org)). Abstracts of all RAND documents may be viewed on the World Wide Web (<http://www.rand.org>). Publications are distributed to the trade by National Book Network. RAND is a nonprofit institution that helps improve public policy through research and analysis; its publications do not necessarily reflect the opinions or policies of its research sponsors.*

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